

CLAIMS

- 1 1. An electronic camera apparatus, comprising:
2 an electronic optical sensing apparatus, said electronic optical sensing apparatus
3 sensing optical images and converting sensed images to an electronic signal;
4 a buffer memory;
5 a video storage medium interface for storing video images captured by said optical
6 sensing apparatus on a storage medium; and
7 a controller which operates said electronic camera apparatus in at least one mode,
8 said at least one mode including a first mode wherein said controller concurrently causes
9 said video storage medium interface to store motion video captured by said optical
10 sensing apparatus on a video storage medium at a first resolution, and to temporarily store
11 video frames captured by said optical sensing apparatus in said buffer memory, and
12 responsive to a first user command, saves at least one frame from said buffer memory in a
13 persistent form at a second resolution, said second resolution being finer than said first
14 resolution.

- 1 2. The electronic camera apparatus of claim 1, wherein said electronic optical
2 sensing apparatus, said buffer memory, said video storage medium and said controller are
3 mounted within a common hand-held camera housing.

- 1 3. The electronic camera apparatus of claim 1, wherein said electronic optical
2 sensing apparatus is mounted in a housing remote from said buffer memory, said video
3 storage medium and said controller.

- 1 4. The electronic camera apparatus of claim 1, wherein said controller comprises a
2 programmable processor executing a control program for controlling the operation of said
3 electronic camera apparatus.

1 5. The electronic camera apparatus of claim 1, wherein said optical sensing
2 apparatus comprises a charge-coupled device (CCD) array.

1 6. The electronic camera apparatus of claim 1, wherein said controller operating in
2 said first mode stores each video frame captured by said optical sensing apparatus in said
3 buffer during a respective temporary period.

1 7. The electronic camera apparatus of claim 1, wherein said controller operating in
2 said first mode stores every Nth video frame captured by said optical sensing apparatus in
3 said buffer during a respective temporary period, where $N > 1$.

1 8. The electronic camera apparatus of claim 7, wherein N is a user-selectable
2 parameter.

1 9. The electronic camera apparatus of claim 1, wherein said buffer is organized as at
2 least one circular buffer in which the oldest stored frame is overwritten with a new frame
3 when the new frame is captured.

1 10. The electronic camera apparatus of claim 9, wherein said buffer is organized as a
2 plurality of circular buffers, each circular buffer storing frames at a respective resolution,
3 a first circular buffer storing frames at a higher resolution than a second circular buffer.

1 11. The electronic camera apparatus of claim 1, wherein a resolution of frames stored
2 in said buffer is a user-selectable parameter.

1 12. The electronic camera apparatus of claim 1, wherein said controller, responsive to
2 said first user command, saves the entire contents of said buffer memory in a persistent
3 form at said second resolution.

1 13. The electronic camera apparatus of claim 1, wherein said controller, responsive to
2 said first user command, saves a fixed portion of the contents of said buffer memory in a
3 persistent form at said second resolution, said fixed portion being less than all of the
4 buffer contents.

1 14. The electronic camera apparatus of claim 1, wherein said controller, responsive to
2 said first user command, saves a user-selectable portion of the contents of said buffer
3 memory in a persistent form at said second resolution, said user-selectable portion being
4 potentially less than all of the buffer contents.

1 15. The electronic camera apparatus of claim 14, wherein said user-selectable portion
2 of the contents of said buffer is determined by playing the contents of said buffer
3 backwards to the user on a display of said camera, and receiving a user selection
4 corresponding to a beginning frame to be saved in said persistent form.

1 16. A method for operating an electronic camera apparatus, comprising the steps of:
2 capturing a sequence of optical images with an electronic optical sensing
3 apparatus;

4 storing motion video images from said sequence of optical images on a motion
5 video storage medium at a first resolution;

6 temporarily storing image data from said sequence of optical images in a buffer,
7 said step of temporarily storing image data being performed concurrently with said step of
8 storing motion video images; and

9 responsive to a user command, saving at least some images from said buffer in a
10 persistent form at a second resolution, said second resolution being finer than said first
11 resolution.

1 17. The method for operating an electronic camera apparatus of claim 16, wherein
2 each video frame captured by said optical sensing apparatus is stored in said buffer during
3 a respective temporary period.

1 18. The method for operating an electronic camera apparatus of claim 16, wherein
2 every Nth video frame captured by said optical sensing apparatus is stored in said buffer
3 during a respective temporary period, where $N > 1$.

1 19. The method for operating an electronic camera apparatus of claim 18, wherein N
2 is a user-selectable parameter.

1 20. The method for operating an electronic camera apparatus of claim 16, wherein
2 said buffer is organized as at least one circular buffer in which the oldest stored frame is
3 overwritten with a new frame when the new frame is captured.

1 21. The method for operating an electronic camera apparatus of claim 20, wherein
2 said buffer is organized as a plurality of circular buffers, each circular buffer storing
3 frames at a respective resolution, a first circular buffer storing frames at a higher
4 resolution than a second circular buffer.

1 22. The method for operating an electronic camera apparatus of claim 16, wherein a
2 resolution of frames stored in said buffer is a user-selectable parameter.

1 23. The method for operating an electronic camera apparatus of claim 16, wherein
2 said step of saving at least some images from said buffer in a persistent form comprises
3 saving the entire contents of said buffer memory in a persistent form at said second
4 resolution.

1 24. The method for operating an electronic camera apparatus of claim 16, wherein
2 said step of saving at least some images from said buffer in a persistent form comprises
3 saving a fixed portion of the contents of said buffer memory in a persistent form at said
4 second resolution, said fixed portion being less than all of the buffer contents.

1 25. The method for operating an electronic camera apparatus of claim 16, wherein
2 said step of saving at least some images from said buffer in a persistent form comprises
3 saving a user-selectable portion of the contents of said buffer memory in a persistent form
4 at said second resolution, said user-selectable portion being potentially less than all of the
5 buffer contents.

1 26. The method for operating an electronic camera apparatus of claim 25, wherein
2 said user-selectable portion of the contents of said buffer is determined by playing the
3 contents of said buffer backwards to the user on a display of said camera, and receiving a
4 user selection corresponding to a beginning frame to be saved in said persistent form.

1 27. A method for operating an electronic camera apparatus, comprising the steps of:
2 capturing a continuous stream of optical images with an electronic optical sensing
3 apparatus;
4 temporarily storing image data from said continuous stream of optical images in a
5 circular buffer, said circular buffer being continuously overwritten by new image data
6 from said continuous stream of optical images;
7 responsive to a user command, saving at least some image data from said buffer in
8 a persistent form.

1 28. The method for operating an electronic camera apparatus of claim 27, wherein
2 said step of saving at least some image data from said buffer in a persistent form saves at
3 least some frames at a first resolution, said method further comprising the step of:

4 storing motion video from said continuous stream of optical images on a motion
5 video storage medium at a second resolution, said first resolution being finer than said
6 second resolution, said storing motion video step being performed concurrently with said
7 temporarily storing image data step.

1 29. The method for operating an electronic camera apparatus of claim 27, wherein
2 every Nth video frame captured by said optical sensing apparatus is stored in said circular
3 buffer during a respective temporary period.

1 30. The method for operating an electronic camera apparatus of claim 29, wherein N
2 is a user-selectable parameter, at least one user-selectable value of N being greater than 1.

1 31. The method for operating an electronic camera apparatus of claim 27, wherein
2 said step of saving at least some image data from said buffer in a persistent form
3 comprises saving a fixed portion of said buffer memory in a persistent form.

1 32. The method for operating an electronic camera apparatus of claim 27, wherein
2 said step of saving at least some image data from said buffer in a persistent form
3 comprises saving a user-selectable portion of the contents of said buffer memory in a
4 persistent form, said user-selectable portion being potentially less than all of the buffer
5 contents.

1 33. The method of operating an electronic camera apparatus of claim 32, wherein said
2 user-selectable portion of the contents of said buffer is determined by playing the contents
3 of said buffer backwards to the user on a display of said camera, and receiving a user
4 selection corresponding to a beginning frame to be saved in said persistent form.

1 34. A program product for controlling the operation of an electronic camera
2 apparatus, said electronic camera apparatus having an electronic optical sensing apparatus
3 for sensing optical images and converting sensed images to an electronic signal, said
4 program product comprising a plurality of processor executable instructions recorded on
5 signal-bearing media, wherein said instructions, when executed by at least one
6 programmable processor of said electronic camera apparatus, cause the apparatus to
7 perform the steps of:

8 capturing a sequence of optical images with said electronic optical sensing
9 apparatus;

10 storing motion video images from said sequence of optical images on a motion
11 video storage medium at a first resolution;

12 temporarily storing image data from said sequence of optical images in a buffer,
13 said step of temporarily storing image data being performed concurrently with said step of
14 storing motion video images; and

15 responsive to a user command, saving at least some images from said buffer in a
16 persistent form at a second resolution, said second resolution being finer than said first
17 resolution.